

REMARKS

Favorable reconsideration and allowance of this application are requested.

1. Discussion of Amendments

By way of the amendment instructions above, the abstract has been revised so as to be commensurate with MPEP §608.01(b). In addition, claims 9 and 10 have been recast as independent claims. Thus, the specification and claim objections raised on page 2 of the Official Action have been mooted.

Following entry of this amendment, claims 1-11 will remain pending herein for consideration, of which claims 1 and 9-11 are in independent format.

2. Response to 35 USC §102(b) Rejection

Claims 1-11 attracted a rejection under 35 USC §102(b) as allegedly anticipated by Harpell et al (USP 4,613,535). In this regard, the Examiner seems to be of the opinion that the measured properties recited in the claims, including separating film porosity, are considered to be inherent in Harpell et al. Applicants respectfully disagree and suggest that all claims pending herein are patentably distinguishable over Harpell et al.

The Examiner asserts that Harpell et al discloses that the separating film is an elastomeric film matrix; or face sheet layers of highly orientated ultra-high molecular weight polyethylene in epoxy resin (page 5, 1st paragraph of Official Action). The Examiner further asserts that the burden of proof is on the applicant to show that the separating films disclosed in Harpell et al do not in fact have a porosity of between 40% and 90%.

As disclosed in the present invention, the separating film includes porous polyethylene, polypropylene and polytetrafluoroethylene films which are prepared using

specialized processing techniques such as those disclosed in EP 0184392 and EP 0504954. The inclusion of the porous separating layer results in improvements in anti-ballistic performance, as illustrated in Table 1.

The following comments and observations substantiate that the separating films disclosed in Harpell et al do not in fact have a porosity of between 40% and 90% as defined by the pending claims herein.

In this regard, applicants note that Harpell et al discloses a technique to consolidate the composite material in which the matrix material is heated to flow and occupy the remaining void spaces (column 9, lines 45-49). A further technique comprises heating the matrix, without melting, to cause the matrix to stick or flow. Implicit in the term "matrix" is its function of embedding other structures therein, thereby reducing void space. The structures in Harpell et al include fibers of highly orientated ultra-high molecular weight polyethylene. It is clear that the heat and pressure treatment applied to the elastomeric material is such that elastomeric material at least deforms such that a matrix is formed, hence reducing the porosity of the composite. An embodiment in which the separating film is an elastomeric matrix film, as suggested by the Examiner, will clearly have a porosity of *less than 40%*, given the temperature and pressure applied thereto according to Harpell et al.

The Examiner also states that Harpell discloses that a separating film is a layer of highly orientated ultra-high molecular weight polyethylene in epoxy resin. More specifically, Harpell et al discloses that this composite is an elastomeric matrix (column 10, lines 38-41) which is therefore formed through the application of temperature and pressure (column 9, lines 45-63).

It is common knowledge that the application of temperature and pressure leads to an increased composite density. For instance, GB 2253420 (page 7, lines 11-25)

teaches that pressure compaction expels trapped air from the product such that the density of the product is substantially the same as its fiber and matrix components.

Indeed, the separating films disclosed in Harpell et al, whether they be an elastomeric matrix, alone or in combination with fibers, are inherently low in porosity (i.e., significantly lower than 40% porosity) due to its functional purpose. The elastomer matrix is impregnated or coated onto the fibers as illustrated in Harpell et al's examples. The application of heat and pressure is also applied as described in column 5, lines 24-44 of Harpell et al. Depending upon the selected conditions of pressure and temperature, the adjacent fibers stick together or deform into a film like shape, thereby expelling air from the composite structure.

The examiner also relies upon the statement in Harpell et al in which layers of various forms are arranged "eg. film, of the matrix material" and then to consolidate and heat set the overall structure (column 9, lines 49-53). However, as stated in the remainder of the passage, this structure is subjected to conditions which lead to the flowing or sticking of the matrix, which by nature of the act of "consolidating" results in the reduction of porosity.

The comments of the Examiner on page 5, lines 14-19 of the Official action with respect to the "biaxially stretching" of the film is unclear to the applicant, as such a resulting effect is not implicit at all from the Harpell et al disclosure.¹ For biaxial stretching of the overall structure to occur, the highly orientated ultra-high molecular weight polyethylene fibers are required to be stretched. Contrary to the Examiner's

¹ Of course, if the Examiner has facts within his personal knowledge bearing on this issue, then he is asked to supply the same by way of an appropriate affidavit pursuant to Rule 104(d)(2).

assertion, biaxially stretching will not occur under the temperature and pressures disclosed by Harpell et al. Accordingly, claim 5 is also patentable over Harpell et al.²

In addition to the functional requirements which necessitate that the composite product, including the separating layers have a porosity well below 40%, Harpell et al explicitly discloses that the volume of the composite structure consists **only** of the fiber network and the elastomeric matrix. Thus, at column 8, lines 57-65 Harpell et al instructs that the:

"...fiber network occupies different proportions of the total volume of the simple composite. Preferably, however the fiber network comprises at least about 30 volume percent of the simple composite. For ballistic protecting, the fiber network comprises at least about 50 volume percent, more preferably between about 70 volume percent and most preferably at least about 75 volume percent, with the matrix occupying the remaining volume." (emphasis added)

Thus, Harpell et al discloses that the composite, including any separating film is substantially free of voids and as such necessarily has a porosity of substantially less than 40%. Therefore, claims 1-11 of the present invention are both novel and unobvious over Harpell et al.

3. Comments Regarding Double Patenting

The Examiner has inferentially referenced potential "double patenting" issues with respect to copending applications Serial Nos. 11/714,606; 11/1007,330 and

² Contrary to the Examiner's view, claim 5 is not a "product-by-process" claim. Instead the term "biaxially stretched" connotes a definite structural condition of the film. Thus, while "biaxially stretched" may have some process connotations associated with it, such a term defines a physical characteristic of the film much like the term "frozen" defines a structural characteristic even though it connotes the process of freezing.

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10/532,807. Since no rejection was actually advanced by the Examiner, further comment on such issue appears unnecessary at this time. However, the applicants' review of the claimed subject matter in the referenced copending applications reveals that the feature of the porous separating film as defined in the pending claims of the subject application would in fact render such claims patentably distinct.

4. Fee Authorization

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: /Bryan H. Davidson/
Bryan H. Davidson
Reg. No. 30,251

BHD:dlb
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100